

SEQUENCE LISTING

(1) GENERAL INFORMATION (i) APPLICANT: Gallo, Robert C.

Bryant, Joseph Lunardi-Iskandar, Yanto

(ii) TITLE OF THE INVENTION: Therapeutic Fractions of Sources of hCG (iii) NUMBER OF SEQUENCES: 37

(iv) CORRESPONDENCE ADDRESS: (A) ADDRESSEE: Intellectual Property/Technology Law

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(C) CITY: Research Triangle Park (D) STATE: NC

(E) COUNTRY: USA (F) ZIP: 27709

(V) COMPUTER READABLE FORM: (A) MEDIUM TYPE: Diskette (B) COMPUTER: IBM Compatible

(C) OPERATING SYSTEM: DOS (D) SOFTWARE: PatentIn

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(A) APPLICATION POPULATION POPULATI

(A) APPLICATION NO: USSN 09/220,415

(viii) ATTORNEY/AGENT INFORMATION:

(A) NAME: Steven J. Hultquist

(B) REGISTRATION NUMBER: 28,021

(C) REFERENCE/DOCKET NUMBER: 4115-116

(ix) TELECOMMUNICATION INFORMATION:

(A) TELEPHONE: 919-419-9350

(B) TELEFAX: 919-419-9354

(2) INFORMATION FOR SEQ ID NO:1:

(i) SEQUENCE CHARACTERISTICS:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 539 base pairs

(B) TYPE: nucleic acid (C) STRANDEDNESS: single

(D) TOPOLOGY: linear

(ii) MOLÉCULE TYPE: DNA

(ix) FEATURE:

(A) NAME/KEY: CDS
(B) LOCATION: 26..520

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:1: 52 AGACAAGGCA GGGGACGCAC CAAGG ATG GAG ATG TTC CAG GGG CTG CTG CTG Met Glu Met Phe Gln Gly Leu Leu Leu

-20 TTG CTG CTG AGC ATG GGC GGG ACA TGG GCA TCC AAG GAG CCG CTT Leu Leu Leu Ser Met Gly Gly Thr Trp Ala Ser Lys Glu Pro Leu 100

CGG CCA CGG TGC CGC CCC ATC AAT GCC ACC CTG GCT GTG GAG AAG GAG 148

Arg Pro Arg Cys Arg Pro Ile Asn Ala Thr Leu Ala Val Glu Lys Glu 15 GGC TGC CCC GTG TGC ATC ACC GTC AAC ACC ACC ATC TGT GCC GGC TAC Gly Cys Pro Val Cys Ile Thr Val Asn Thr Thr Ile Cys Ala Gly Tyr 196

TGC CCC ACC ATG ACC CGC GTG CTG CAG GGG GTC CTG CCG GCC CTG CCT Cys Pro Thr Met Thr Arg Val Leu Gln Gly Val Leu Pro Ala Leu Pro 244

CAG GTG GTG TGC AAC TAC CGC GAT GTG CGC TTC GAG TCC ATC CGG CTC Gln Val Val Cys Asn Tyr Arg Asp Val Arg Phe Glu Ser Ile Arg Leu 55 45 292



	CCT GGC TGC CGC GGC GTG AAC CCC GTG GTC TCC TAC GCC GTG GCT Pro Gly Cys Pro Arg Gly Val Asn Pro Val Val Ser Tyr Ala Val 85	340
	Pro Gly Cys Pro Arg Gly Val Ash 100 80 85 70 75 CTC AGC TGT CAA TGT GCA CTC TGC CGC AGC ACC ACT GAC TGC GGG CTC AGC TGT CAA TGT GCA CTC TGC CGC AGC ACC ACT GAC TGC GGG Leu Ser Cys Gln Cys Ala Leu Cys Arg Arg Ser Thr Thr Asp Cys Gly Leu Ser Cys Gln Cys Ala Leu Cys Arg Arg Ser Thr Thr Asp Cys Gly 100 95	388
	GGT CCC AAG GAC CCC TTG ACC TGT GAT GAC CCC CGC TTC CAG GAC Gly Pro Lys Asp His Pro Leu Thr Cys Asp Asp Pro Arg Phe Gln Asp 110	436
	TCC TCT TCC TCA AAG GCC CCT CCC CCC AGC CTT CCA AGC CCA TCC CGA Ser Ser Ser Ser Lys Ala Pro Pro Pro Ser Leu Pro Ser Pro Ser Arg	484
	The ser ser ser ser ser ser ser ser ser se	530
	135	539
	(2) INFORMATION FOR SEQ ID NO:2: (i) SEQUENCE CHARACTERISTICS: (A) LENGTH: 165 amino acids (B) TYPE: amino acid (D) TOPOLOGY: linear	
	(ii) MOLECULE TYPE: protein (xi) SEQUENCE DESCRIPTION: SEQ ID NO:2: (xi) SEQUENCE DESCRIPTION: SEQ ID NO:2: Met Glu Met Phe Gln Gly Leu Leu Leu Leu Leu Leu Ser Met Gly -5 -10 -71	
	-20 -15 -10 Arg Cys Arg Pro Ile Gly Thr Trp Ala Ser Lys Glu Pro Leu Arg Pro Arg Cys Arg Pro Ile	
	Asn Ala Thr Leu Ala Val Glu Lys Glu Gly Cys Pro Val Cys 11e Thr	
¥	Val Asn Thr Thr Ile Cys Ala Gly Tyr Cys Pro Thr Met Thr Arg Val 30	
)	Leu Gln Gly Val Leu Pro Ala Leu Pro Gln Val Val Cys Asn Tyr Arg	
	45 Asp Val Arg Phe Glu Ser Ile Arg Leu Pro Gly Cys Pro Arg Gly Val 75 70 75	
	Asn Pro Val Val Ser Tyr Ala Val Ala Leu Ser Cys Gln Cys Ala Leu 85 87 88	
	Cys Arg Arg Ser Thr Thr Asp Cys Gly Gly Pro Lys Asp His Pro Leu 105 107	
	Thr Cys Asp Asp Pro Arg Phe Gln Asp Ser Ser Ser Lys Ala Pro	
	110 115 Pro Pro Ser Leu Pro Ser Pro Ser Arg Leu Pro Gly Pro Ser Asp Thr 130 135 140	
	Pro Ile Leu Pro Gln 145	
	(2) INFORMATION FOR SEQ ID NO:3: (i) SEQUENCE CHARACTERISTICS: (A) LENGTH: 14 amino acids (B) TYPE: amino acid (D) TOPOLOGY: linear (ii) MOLECULE TYPE: peptide (xi) SEQUENCE DESCRIPTION: SEQ ID NO:3: Met Thr Arg Val Leu Gln Gly Val Leu Pro Ala Leu Pro Gln 10	
	1	
	(2) INFORMATION FOR SEQ ID NO:4: (i) SEQUENCE CHARACTERISTICS: (A) LENGTH: 10 amino acids (B) TYPE: amino acid (D) TOPOLOGY: linear (ii) MOLECULE TYPE: peptide (xi) SEQUENCE DESCRIPTION: SEQ ID NO:4: Leu Gln Gly Val Leu Pro Ala Leu Pro Gln 1	
	(2) INFORMATION FOR SEQ ID NO:5: (i) SEQUENCE CHARACTERISTICS: (A) LENGTH: 7 amino acids (B) TYPE: amino acid (D) TOPOLOGY: linear	



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(ii) MOLECULE TYPE: peptide
      (xi) SEQUENCE DESCRIPTION: SEQ ID NO:5:
       Glý val Leu Pro Ala Leu Pro
(2) INFORMATION FOR SEQ ID NO:6:
        (i) SEQUENCE CHARACTERISTICS
      (i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 13 amino acids

(B) TYPE: amino acid

(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:6:
        Leu Gln Gly Val Leu Pro Ala Leu Pro Gln Val Val Cys
 (2) INFORMATION FOR SEQ ID NO:7:
         (i) SEQUENCE CHARACTERISTICS:
       (i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 11 amino acids

(B) TYPE: amino acid

(D) TOPOLOGY: circular, linear

(ii) MOLECULE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:7:

Thr Cys Asp Asp Pro Arg Phe Gln Asp Ser Ser

1
 (2) INFORMATION FOR SEQ ID NO:8:
        (i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 13 amino acids

(B) TYPE: amino acid

(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(vi) SEQUENCE DESCRIPTION: SEQ T
         (xi) SEQUENCE DESCRIPTION: SEQ ID NO:8:
          Met Thr Arg Val Leu Gln Gly Val Leu Pro Ala Leu Pro
  (2) INFORMATION FOR SEQ ID NO:9
           (i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 12 amino acids
          (B) TYPE: amino acid
(D) TOPOLOGY: linear
(ii) MOLECULE TYPE: peptide
(xi) SEQUENCE DESCRIPTION: SEQ ID NO:9:
The Arg Val Ley Cla Cla Val Ley Pro Al
            Thr Arg Val Leu Gln Gly Val Leu Pro Ala Leu Pro
   (2) INFORMATION FOR SEQ ID NO:10:
            (i) SEQUENCE CHARACTERISTICS:
                     (A) LENGTH: 11 amino acids
                    (B) TYPE: amino acid
(D) TOPOLOGY: linear
           (ii) MOLÉCULE TYPE: peptide
           (xi) SEQUENCE DESCRIPTION: SEQ ID NO:10:
            Arg Val Leu Gln Gly Val Leu Pro Ala Leu Pro
    (2) INFORMATION FOR SEQ ID NO:11:
(i) SEQUENCE CHARACTERISTICS
           (i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 10 amino acids

(B) TYPE: amino acid

(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:11:
             Val Leu Gln Gly Val Leu Pro Ala Leu Pro
     (2) INFORMATION FOR SEQ ID NO:12:
(i) SEQUENCE CHARACTERISTICS
                       (A) LENGTH: 14 amino acids
                       (B) TYPE: amino acid
             (i) MOLECULE TYPE: peptide
(xi) SEQUENCE DESCRIPTION: SEQ ID NO:12:
              Val Leu Gln Gly Val Leu Pro Ala Leu Pro Gln Val Val Cys
      (2) INFORMATION FOR SEQ ID NO:13:
               (i) SEQUENCE CHARACTERISTICS:
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(A) LENGTH: 9 amino acids
       (B) TYPE: amino acid
(D) TOPOLOGY: linear
(ii) MOLECULE TYPE: peptide
       (xi) SEQUENCE DESCRIPTION: SEQ ID NO:13:
         Leu Gln Gly Val Leu Pro Ala Leu Pro
(2) INFORMATION FOR SEQ ID NO:14:
         (1) SEQUENCE CHARACTERISTICS
                    (A) LENGTH: 8 amino acids
       (B) TYPE: amino acid
(D) TOPOLOGY: linear
(ii) MOLECULE TYPE: peptide
(xi) SEQUENCE DESCRIPTION: SEQ ID NO:14:
         Gln Gly Val Leu Pro Ala Leu Pro
 (2) INFORMATION FOR SEQ ID NO:15:
          (i) SEQUENCE CHARACTERISTICS:
                    (A) LENGTH: 10 amino acids
                     (B) TYPE: amino acid
(D) TOPOLOGY: linear
         (ii) MOLECULE TYPE: peptide
(xi) SEQUENCE DESCRIPTION: SEQ ID NO:15:
Leu Gln Gly Val Leu Pro Ala Leu Pro Gln
  (2) INFORMATION FOR SEQ ID NO:16:
(i) SEQUENCE CHARACTERISTICS
          (1) SEQUENCE CHARACTERISTICS.

(A) LENGTH: 11 amino acids

(B) TYPE: amino acid

(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:16:
            Leu Gln Gly Val Leu Pro Ala Leu Pro Gln Val
   (2) INFORMATION FOR SEQ ID NO:17:
           INFORMATION FOR SEQ 1D NO:1/:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 12 amino acids

(B) TYPE: amino acid

(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:17:

Leu Gln Gly Val Leu Pro Ala Leu Pro Gln Val Val

1
    (2) INFORMATION FOR SEQ ID NO:18:
            (1) SEQUENCE CHARACIERISTICS:

(A) LENGTH: 14 amino acids

(B) TYPE: amino acid

(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:18:

Leu Gln Gly Val Leu Pro Ala Leu Pro Gln Val Cys Asn

1 5
              (i) SEQUENCE CHARACTERISTICS:
      (2) INFORMATION FOR SEQ ID NO:19:
(i) SEQUENCE CHARACTERISTICS:
                         (A) LENGTH: 8 amino acids
                         (B) TYPE: amino acid
              (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:19:
               Gly val Leu Pro Ala Leu Pro Gln
      (2) INFORMATION FOR SEQ ID NO:20:
(i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 9 amino acids
               (B) TYPE: amino acid
(D) TOPOLOGY: linear
(ii) MOLECULE TYPE: peptide
(xi) SEQUENCE DESCRIPTION: SEQ ID NO:20:
                 Gly val Leu Pro Ala Leu Pro Gln val
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(2) INFORMATION FOR SEQ ID NO:21:
(i) SEQUENCE CHARACTERISTICS
                (A) LENGTH: 10 amino acids
      (B) TYPE: amino acid
(D) TOPOLOGY: linear
(ii) MOLECULE TYPE: peptide
(xi) SEQUENCE DESCRIPTION: SEQ ID NO:21:
        Gly Val Leu Pro Ala Leu Pro Gln Val Val
(2) INFORMATION FOR SEQ ID NO:22:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 12 amino acids

(B) TYPE: amino acid

(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:22:

Glv Val Leu Pro Ala Leu Pro Gln Val Val
        Gly Val Leu Pro Ala Leu Pro Gln Val Val Cys Asn
 (2) INFORMATION FOR SEQ ID NO:23:
(i) SEQUENCE CHARACTERISTICS
                 (A) LENGTH: 98 amino acids (B) TYPE: amino acid
        (B) TYPE. AMITTIO META

(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:23:

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:23:

Val Leu Pro Ala Leu Pro Gln Val Val Cys Asn Tyr Arg Asp Val Arg

Val Leu Pro Ala Leu Pro Gln Val Val Cys Asn Tyr Arg Asp Pro Val
         Phe Glu Ser Ile Arg Leu Pro Gly Cys Pro Arg Gly Leu Asn Pro Val
          Val Ser Tyr Ala Val Ala Leu Ser Cys Gln Cys Ala Leu Cys Arg Arg
          Ser Thr Thr Asp Cys Gly Gly Pro Lys Asp His Pro Leu Thr Cys Asp \frac{50}{50}
          Asp Pro Arg Phe Gln Asp Ser Ser Ser Ser Lys Ala Pro Pro Pro Ser 65
          Leu Pro Ser Pro Ser Arg Leu Pro Gly Pro Ser Asp Thr Pro Ile Leu
90 95
           Pro Gln
   (2) INFORMATION FOR SEQ ID NO:24:
           (i) SEQUENCE CHARACTERISTICS
                   (A) LENGTH: 88 amino acids
(B) TYPE: amino acid
          Arg Gly Leu Asn Pro Val Val Ser Tyr Ala Val Ala Leu Ser Cys Gln
            Cys Ala Leu Cys Arg Arg Ser Thr Thr Asp Cys Gly Gly Pro Lys Asp
            His Pro Leu Thr Cys Asp Asp Pro Arg Phe Gln Asp Ser Ser Ser Ser
50 60
            Lys Ala Pro Pro Pro Ser Leu Pro Ser Pro Ser Arg Leu Pro Gly Pro 65 70 75
            Ser Asp Thr Pro Ile Leu Pro Gln
                                      85
     (2) INFORMATION FOR SEQ ID NO:25:
             (i) SEQUENCE CHARACTERISTICS:
                     (A) LENGTH: 37 amino acids
                     (B) TYPE: amino acid
(D) TOPOLOGY: linear
            (ii) MOLECULE TYPE: peptide
(ii) MOLECULE TYPE: peptide
(xi) SEQUENCE DESCRIPTION: SEQ ID NO:25:
(xi) SEQUENCE DESCRIPTION: SEQ ID NO:25:

Thr Cys Asp Asp Pro Arg Phe Gln Asp Ser Ser Ser Ser Lys Ala Pro
Thr Cys Asp Asp Pro Arg Phe Gln Asp Thr
             Pro Pro Ser Leu Pro Ser Pro Ser Arg Leu Pro Gly Pro Ser Asp Thr
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30
                                                                                               25
                                           20
            pro Ile Leu Pro Gln
35
35
(2) INFORMATION FOR SEQ ID NO:26:
    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH: 14 amino acids
        (B) TYPE: amino acid
        (D) TOPOLOGY: circular
    (ii) MOLECULE TYPE: peptide
    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:26:
    (xi) SEQUENCE DESCRIPTION: DESCRIPTION: SEQ ID NO:26:
    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:26:
    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:27:
                    (2) INFORMATION FOR SEQ ID NO:27:
(i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 10 amino acids
(B) TYPE: amino acid
(C) STRANDEDNESS: single
(D) TOPOLOGY: linear
(ii) MOLECULE TYPE: protein
                      (ii) MOLECULE TYPE: protein
(xi) SEQUENCE DESCRIPTION: SEQ ID NO:27:
      Cys Asp Asp Pro Arg Phe Gln Asp Ser Ser 10
                              (2) INFORMATION FOR SEQ ID NO:28:
       (2) INFORMATION FOR SEQ ID NO:28:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 11 amino acids

(B) TYPE: amino acid

(C) STRANDEDNESS: single

(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: protein

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:28:

(Xi) SEQUENCE DESCRIPTION: SEQ ID NO:28:

(Xi) SEQUENCE DESCRIPTION: SEQ ID NO:29:
         1 (2) INFORMATION FOR SEQ ID NO:29:

(i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 12 amino acids
(B) TYPE: amino acid
(C) STRANDEDNESS: single
(D) TOPOLOGY: linear
(ii) MOLECULE TYPE: protein
(xi) SEQUENCE DESCRIPTION: SEQ ID NO:29:
Leu Thr Cys Asp Asp Pro Arg Phe Gln Asp Ser Ser
10
1 (2) INFORMATION FOR SEO ID NO:30:
                            (2) INFORMATION FOR SEQ ID NO:30:(i) SEQUENCE CHARACTERISTICS:
            (A) LENGTH: 24 amino acids
              Asp Pro Arg Phe Gin Asp Ser Ser 20
                              (2) INFORMATION FOR SEQ ID NO:31:
(i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 23 amino acids
(B) TYPE: amino acid
(C) STRANDEDNESS: single
                Ala Leu Pro Gln val Val Cys
                                         (2) INFORMATION FOR SEQ ID NO:32:
                                                20
                                  (i) SÉQUENCE CHARACTERISTICS:
(A) LENGTH: 23 amino acids
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(B) TYPE: amino acid
(C) STRANDEDNESS: single
(D) TOPOLOGY: linear
          (ii) MOLECULE TYPE: protein
(xi) SEQUENCE DESCRIPTION: SEQ ID NO:32:
Gly val Leu Pro Ala Leu Pro Gln val val Cys Leu Thr Cys Asp Asp 15
Pro Arg Phe Gln Asp Ser Ser
                    20
                (2) INFORMATION FOR SEQ ID NO:33:
           (i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 34 amino acids
               (B) TYPE: amino acid
(C) STRANDEDNESS: single
           (D) TOPOLOGY: linear
(ii) MOLECULE TYPE: protein
(xi) SEQUENCE DESCRIPTION: SEQ ID NO:33:
 Pro Arg Cys Arg Pro Ile Asn Ala Thr Leu Ala Val Glu Lys Glu Gly
15
 Cys Pro val Cys Ile Thr val Asn Thr Thr Ile Cys Ala Gly Tyr Cys
  Pro Thr
                 (2) INFORMATION FOR SEQ ID NO:34:
            (i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 20 amino acids
  Val Arg Phe Glu
             (2) INFORMATION FOR SEQ ID NO:35:
(i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 9 amino acids
(B) TYPE: amino acid
(C) STRANDEDNESS: single
(D) TOPOLOGY: linear
(ii) MOLECULE TYPE: protein
(Xi) SEQUENCE DESCRIPTION: SEO ID NO
              (xi) SEQUENCE DESCRIPTION: SEQ ID NO:35:
    Val Leu Pro Ala Leu Pro Gln Val Val
1
               (2) INFORMATION FOR SEQ ID NO:36:
(i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 14 amino acids
    (B) TYPE: amino acid
(C) STRANDEDNESS: single
(D) TOPOLOGY: linear
(ii) MOLECULE TYPE: protein
(xi) SEQUENCE DESCRIPTION: SEQ ID NO:36:
Cys Val Ala Gln Pro Gly Pro Gln Val Leu Leu Val Leu Cys
1
                (2) INFORMATION FOR SEQ ID NO:37:
(i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 15 amino acids
                    (B) TYPE: amino acid
(C) STRANDEDNESS: single
                (D) TOPOLOGY: linear
(ii) MOLECULE TYPE: protein
(xi) SEQUENCE DESCRIPTION: SEQ ID NO:37:
      Cys val Ala Gin Gly val Leu Pro Ala Leu Pro Gin val val Cys
1 10 15
```